

Dräger refuge chamber



ST-1794-2005

Tunnel construction personnel face serious risks in their work underground. Building sites which are a long way into the tunnel and branch out in different directions mean that it is virtually impossible to escape through the smoke-filled tunnel in the event of a fire.



ST-1793-2005

Refuge chamber for 16 persons

Back in 1985, Dräger designed a refuge chamber for just this type of hazard situation, providing workers with a safe haven to escape to if the ambient air is polluted. In subsequent years the refuge chamber became used more and more often in the mining industry and during tunnel construction work.

the air inside the chamber is additionally regenerated in a closed-circuit system, i.e. oxygen is added and carbon dioxide removed using a CO₂ absorber. If necessary, the air can be cooled by an air-conditioning unit.



ST-1792-2005

The inside of a refuge chamber.

At construction sites such as these, an escape and rescue plan must be drawn up to ensure the safety and rescue of workers in all work and hazard situations, including fire. If in an emergency situation the escape route is too long or could be cut off, a refuge chamber is installed close to the work-place. There must be no fire hazards in the direct vicinity of the chamber, as it does not provide protection against direct heat.

The inside of the chamber provides seating for the number of people needing to be accommodated. The technical facilities for maintaining the positive pressure and the renewal of the air are easy to use so it is ensured that no mistakes are made in an emergency situation. Only a tap has to be opened to activate the protection system (with a positive pressure of at least 100 Pa).

In an emergency, the refuge chamber is activated as part of an alarm plan. When the air supply is switched on, the inside of the chamber is supplied with breathable air and a slight positive pressure is generated. This positive pressure prevents any contaminated outside air from entering the chamber.

The size of the chamber is determined by the number of people needing to be accommodated. The external dimensions of the chamber must reflect the space available at the site of installation. If sufficient space is available, the wider escape chambers (10 and 20 ft) in standard design have the advantage of providing more room for their occupants.

If personnel has to remain in the chamber for a longer period of time, or large numbers of people have to be accommodated,

If the escape chamber is to be installed on a tunnelling machine, for example, the limited available space needs to be taken into consideration; refuge chambers with special dimensions are available for such applications.

The refuge chambers can be optionally equipped with a wash basin, toilet, emergency provisions (drinking water, blankets, food) and first aid facilities. The stay in the chamber ends when external aid arrives in the form of rescue personnel. Recent fires

in tunnels have shown that rescue crews are often only able to reach people after many hours. This has resulted in the fact that the required duration of stay in an refuge chamber has been increased to between 8 and 24 hours, depending on the particular circumstances of the construction site.

TECHNICAL DATA

Design	10 and 20 ft ISO container, special dimensions upon request
No. of personas	as required
Duration of stay	up to 48 hrs (depending on design)
Positive pressure	at least 100 Pa

EQUIPMENT TO CUSTOMER SPECIFICATION

Interior facilities to customer specification: table and chairs, first aid equipment, wash basin, toilet etc.
Independent air supply via breathing air tank for air supply and positive pressure
External air supply from a low pressure system
Air regeneration: oxygen supply, CO ₂ absorption, independent power supply
Dräger gas detector for carbon dioxide and oxygen
Cooling of air inside the chamber by air-conditioning unit
Emergency provisions (blankets, drinking water, food etc.)
Oxygen masks, storage box for emergency equipment
Explosion-proof design
Fork-lift pockets, runners
Chamber for blasting operations



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